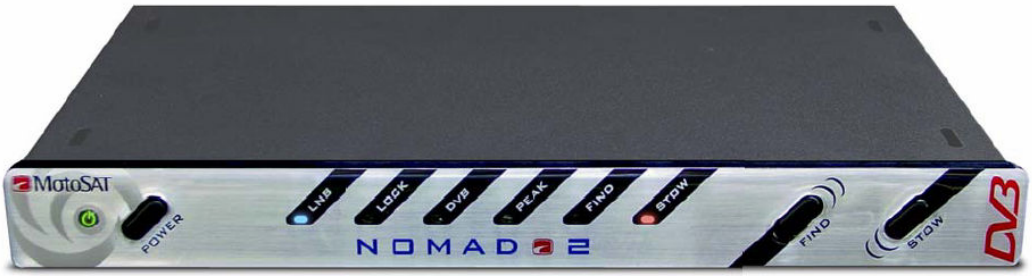

Satellite TV

Nomad 2 User Guide

v.1

MotoSAT

LM-07.19.06

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Rev. 08.29.07

Personal Information Page

Installing Dealer Name _____

Date of Installation _____ _____ _____
Day Month Year

Type of System Executive ___ MD500 ___ MD1000.2 ___
MHDTV ___ MD5Slim ___ MSD60 ___
Freedom (not recommended)_____

Serial Number of Controller _____

Comments:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

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NOMAD 2 Universal Controller Bill of Materials:

The NOMAD 2 Universal Controller Systems (when shipped with a mount of choice) is shipped with the following components:

Components shipped with ***NOMAD 2 Controller***:

- NOMAD 2 Universal Controller
- 12 VDC 4 AMP Power Supply
- NOMAD 2 Universal Controller User Manual

Components shipped with your ***MOUNT of choice***:

- 30’ Control Cable
- 30’ Coax Cable

NOMAD 2 Universal Controller Specifications:

- 11” Wide
- 7.5” Deep
- 1.250” Height
- 2.7 lbs. Weight
- Voltage Requirements: 12VDC 4 AMP power supply (supplied)

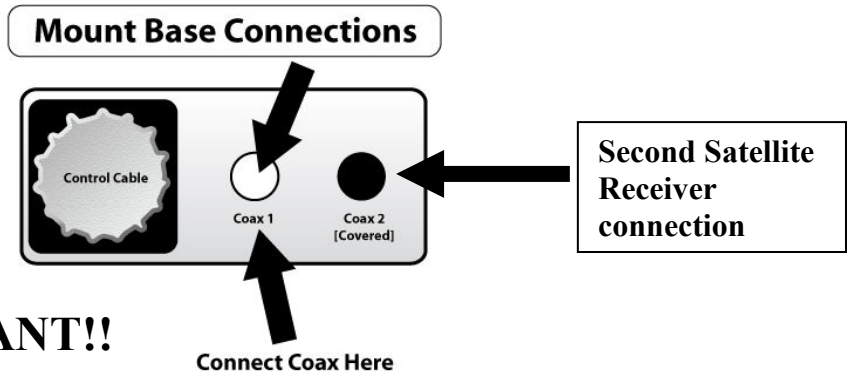
Using the NOMAD 2 Universal Controller

- **Dish Pro Series Receiver(s) (300,500,800) are a required component when using the Model MD500.**

First Time Installation:

1- Plug in all necessary cable connections to the back of the NOMAD 2 (see diagram on pg. 8).
Note: Plugging the receiver and NOMAD 2 controller into an independent power strip is recommended.

2- Connect coax from NOMAD 2 to Mount.



(Labeled "To Nomad 2)

2- Set the Nomad 2 to the proper satellite mode (the programming service that you are using) by using the Quick Guide for DirecTV, Dish Network, Etc. You will also need to know whether or not your unit is a ***non-skewable*** unit [Executive18" or 24"], or a ***skewable*** unit [MD500, MHDTV].

3- To get into the "Program Mode"…..
   a. Turn the Nomad power "OFF"
   b. Hold both the 'Find' *and* 'Stow' buttons down and hit the Power Button "ON"
   c. Continue to hold 'Find' and 'Stow' button down for an additional 5 seconds after releasing the Power button
   d. Release the 'Find' and 'Stow' buttons. At this point and the front display lights will show the current satellite mode of the unit (Note: No Lights indicate "Dish Network Non-Skewable mode."
   e. Use the 'Find' and 'Stow' buttons to cycle through the light patterns until the desired configuration is shown.
   f. Turn the 'Power' off to store the programmed settings **[See page 14 Satellite Mode Guide and page 17 Quick Guide for configurations and more detailed instructions]**

4- To run the **"MANDATORY"** Test Dish function, hit the power button, wait 10 seconds for the Nomad to finish the startup sequence then, press the 'Find' and 'Stow' buttons simultaneously. *This procedure must be performed following any configuration change.*

BUTTONS:

NOMAD 2 UNIVERSAL CONTROLLER "FRONT" PANEL

POWER: (Provides power to the Nomad 2 Controller)

FIND: (Find Satellite)

Pressing the Find button will begin the dish "search" to locate and lock onto the "main" satellite.

For non-skewable single LNB dishes pressing the Find button, while on satellite enables you to switch between multiple satellites. Pressing the find button, while locked onto a satellite, will go to the next satellite in order such as:

- DIRECTV will toggle between 101 and 119.
- Dish Network will toggle between satellites 110 and 119.
- Dish Network *International East* will toggle between satellites 61.5, 110, and 119.
- Dish Network *International West* will toggle between satellites 110, 119 and 148
- Dish Network *High Definition* will toggle between satellites 110, 119 and 129 (Note: You must have a High Definition receiver to receive the High Definition signals)
- Bell ExpressVu will toggle between satellites 82 and 91.

Programming Services and their Assigned Satellites

1. Dish Network – Can use satellite(s) 110 & 119 [also 61.5 and 148]
2. DIRECTV – Can use satellite(s) 101, 110 and 119 (110 takes a special LNB which is included with the Skewable MHDTV System)
3. Bell ExpressVu – Can use satellite(s) 82 & 91

STOW: (Stowing the Dish)

Pressing this button returns the dish to its stowed or travel position.

FRONT PANEL LED'S:

LNB: When lit, this LED indicates the coax cable from the receiver has been correctly connected to the NOMAD 2 Universal Controller, and the receiver has power. (**Note:** The LNB LED is illuminated once the coax cable of the receiver has been connected, but does **NOT** indicate the Controller has power).

LOCK: When lit, this LED indicates the "strongest" or "highest" signal strength of the satellite has been achieved and is locked onto the desired satellite.

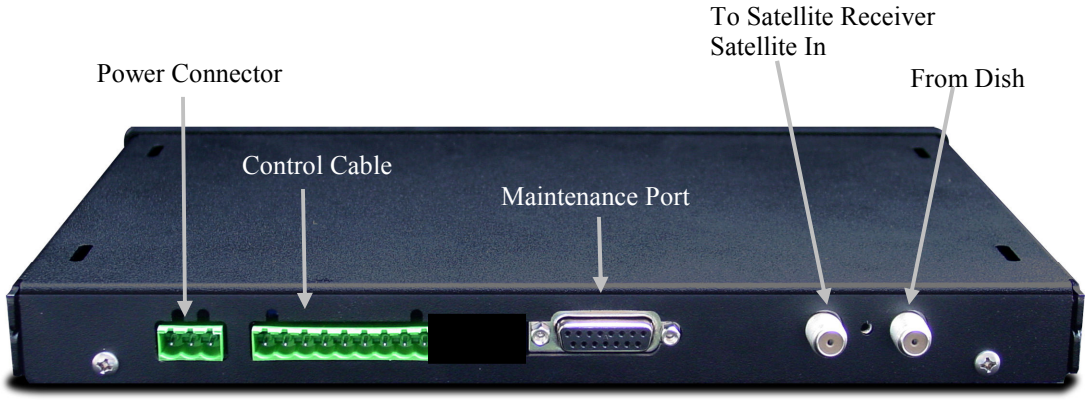
DVB: When lit, indicates that the DVB is powered up and ready to identify satellites.

PEAK: When lit, this LED indicates the dish has found a signal and is adjusting for the "strongest" or "highest" signal strength of the satellite. It will turn off after satellite lock has been achieved.

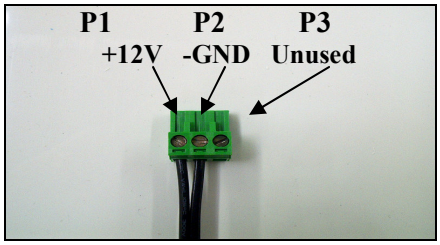
FIND: When the "Find" button has been pressed, the Find LED will blink (indicating that the dish is moving) until a satellite has been found and identified and can establish a connection. Once the satellite has been identified, the Find LED will remain solid. (The Stow LED also blinks indicating motor movement.) If the Nomad 2 is locked onto a satellite with a skewable dish, pressing the "Find" button again will activate a re-peak routine which will verify the dish alignment to the satellite for optimum signal level for the skewable dishes, the MD500 (for Dish Network) and the MHDTV (for DirecTV). Pressing the Find button on non-skewable dishes (Executive 18" and 24") allows you to toggle between satellites.

STOW: When the "Stow" button is pressed, the Stow LED will blink indicating motor movement as the dish is being stowed. Once the dish has been stowed, the Stow LED will remain solid for a short period of time and then the power will automatically turn off.

NOMAD 2 UNIVERSAL CONTROLLER REAR VIEW

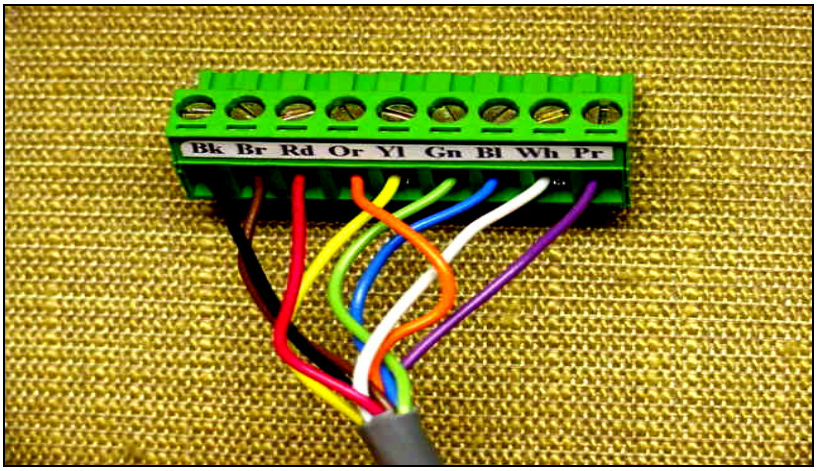


Power Connector: Is used to connect the 12 VDC **4 AMP** power supply to provide power to the NOMAD 2 Universal Controller. (**Note:** Only use the power supply provided by MotoSAT.)



Control Cable: Connects the mount by way of a 9 pin conductor cable to the NOMAD 2 Universal Controller. The cable is color coordinated for exact connection configuration. (See Figure Below)

Wiring to 9 Pin Control Connector
Black-Brown-Red-Orange-Yellow-Green-Blue-White-Purple
(Purple is only used on Skewable Mounts, and not required on Non-Skewable Mounts)



Maintenance Port: Used to provide software upgrades.

Satellite in (on Receiver): Coax connection used to connect the NOMAD 2 Universal Controller to the satellite/LNB connection on the satellite receiver.

From Dish: Coax connection from the dish to the NOMAD 2 Universal Controller.

OPERATION PROCEDURES

TO FIND A SATELLITE

If the Mount Type is SKEWABLE (Models MD500, MHDTV and Star Choice)

1. Turn ON power.
2. After 5-10 seconds (after Nomad power up sequencing) press the FIND button. **The dish will search out and lock onto the proper programmed satellite.**
3. **To initiate a REPEAK – *Skewable Mounts ONLY* -** Pressing the Find button, when the signal strength shows weakness, will re-peak the dish for a higher signal quality when using the twin LNB skewable dish model(s) MD500 or triple LNB MDHDTV **ONLY**. (**Note:** Single LNB, non-skewable dishes "re-peak" during satellite transition or acquisition.)

If the Mount Type is NON-SKEWABLE (Executive (One LNB))

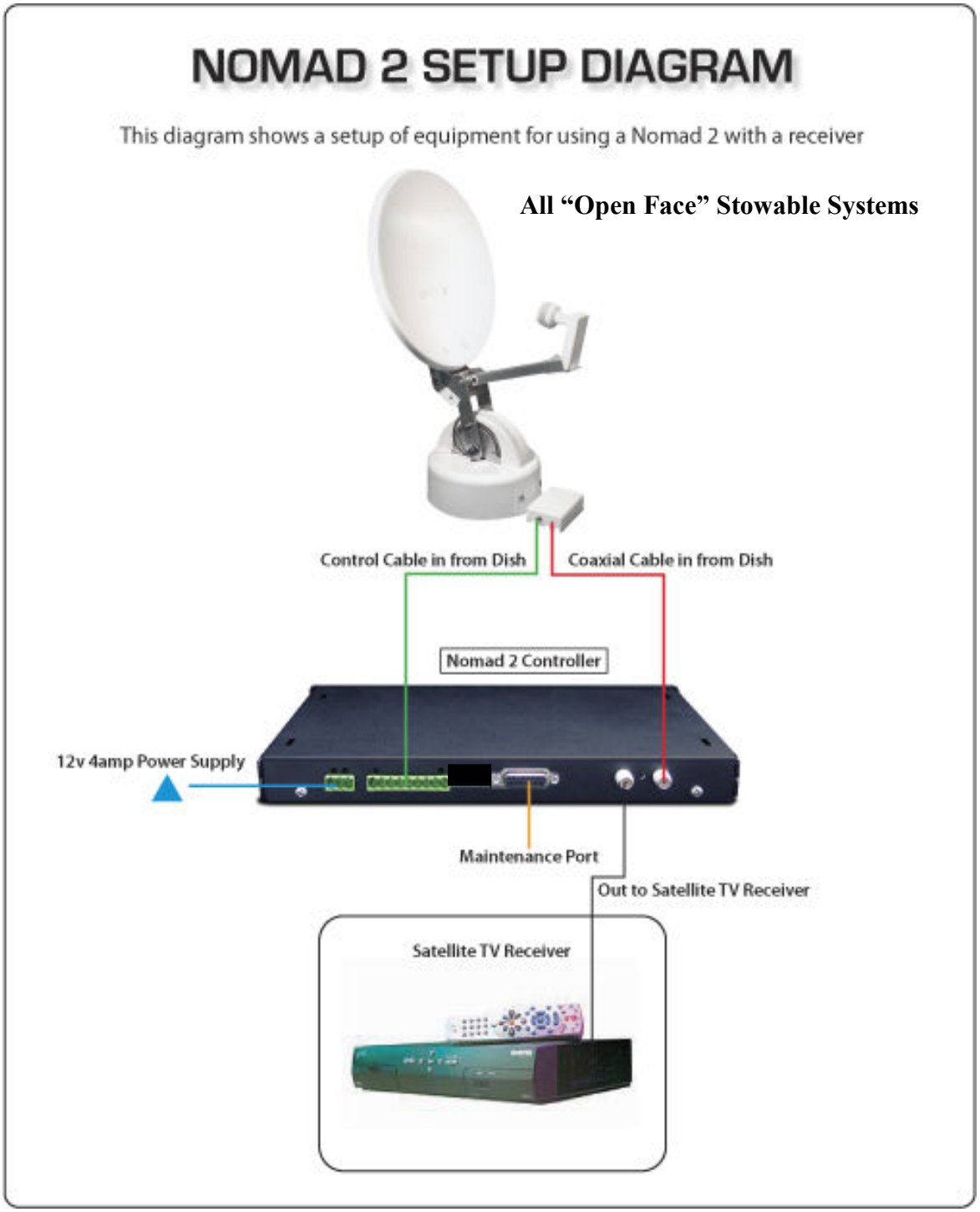
1. Turn ON power.
2. After 5-10 seconds (after Nomad power up sequencing) press the FIND button. **The dish will search out and lock onto the proper programmed satellite.**
3. Pressing the FIND button while on satellite will initiate a 'FIND NEXT SATELLITE' routine.

TO STOW THE DISH

1. Press the STOW button and the dish will stow, or return, to the proper travel position.

After the dish has been properly stowed, the power will automatically turn OFF.

NOMAD 2 VISUAL SETUP DIAGRAM



MotoSAT Products That Use The Nomad 2 Controller

Non-Skewable Mounts

The Executive comes in either 18 or 24" dish sizes. All models are equipped with dual output LNB's.

EXECUTIVE (1 LNB)

Skewable Mounts

MD500 (2 LNB)

MD1000 (3 LNB)

MHDTV (2 LNB)

12

WIRING TABLE
Open Face TV Mounts

The Control Cable, 9 conductors, colored coded, 22Awg stranded that connects to the mount with a twist lock connector is configured in the following manner:

Color Code	Pin Designation	Mount Destination	Counts per Degree
Black	1	Motor, Azimuth Positive	
*Brown	2	Motor, Azimuth/Skew Negative	
*Red	3	Motor, Elevation/Skew Positive	
Orange	4	Motor, Elevation Negative	
Yellow	5	Sensor, Count Azimuth	3.408
Green	6	Sensor, Ground Azimuth/Elevation	
Blue	7	Sensor Count Elevation	5.034
White	8	Power, Mount LED	
**Purple	9	Sensor, Count Skew	8.500

* The Brown and Red wire perform a dual function when used on a Skewable (MD500/MD1000/MHDTV/Star Choice) mounts. These wires control the Skew motors when directed by the Nomad 2 Controller. Applying 12 volt power directly to these wires will skew the dish.

**The Purple cable is for use on skewable dishes but it WILL NOT effect the operations of a non-skewable dish when it is connected (or not connected).

The Mount is coil wrapped inside with the following cables and wire:

2 ea RG179 Teflon coated coax cables (can do four (4) if required)

1 ea Control Cable, 9 conductor cable, colored coded, 22Awg stranded. This cable is molded with a twist lock connector on one end and manually terminated at the Nomad 2 end with a 9 pin connector.

2 or 4 ea RG179 coax cables terminate at the LNB will provide additional cabling for multiple receivers.

1 ea Black and White 22Awg stranded wires carry the positive (white) voltage and ground (black) to the LED which is used to illuminate the dish face.

For any questions or comments please contact our
Technical Support Department at 1-800-247-7486 Ext 338.

Programming Modes

To get into the "**Program Mode**"…..

1. Turn the Nomad power "OFF"
2. Hold both the 'Find' *and* 'Stow' buttons down and hit the Power Button "ON"
3. Continue to hold 'Find' and 'Stow' button down for an additional 5 seconds after releasing the Power button
4. Release the 'Find' and 'Stow' buttons at this point and the front display lights will show the current satellite mode of the unit (Note: No Lights indicate "Dish Network Non-Skewable mode."
5. Use the 'Find' and 'Stow' buttons to cycle through the light (LED) patterns until the desired configuration is shown.
6. Turn the 'Power' off to store the programmed settings.
7. When you turn "Power" back on, you can do a Test Dish or "Find" satellite.

NOMAD 2 PROGRAMMING MODES

By Service
For software version V25 or higher

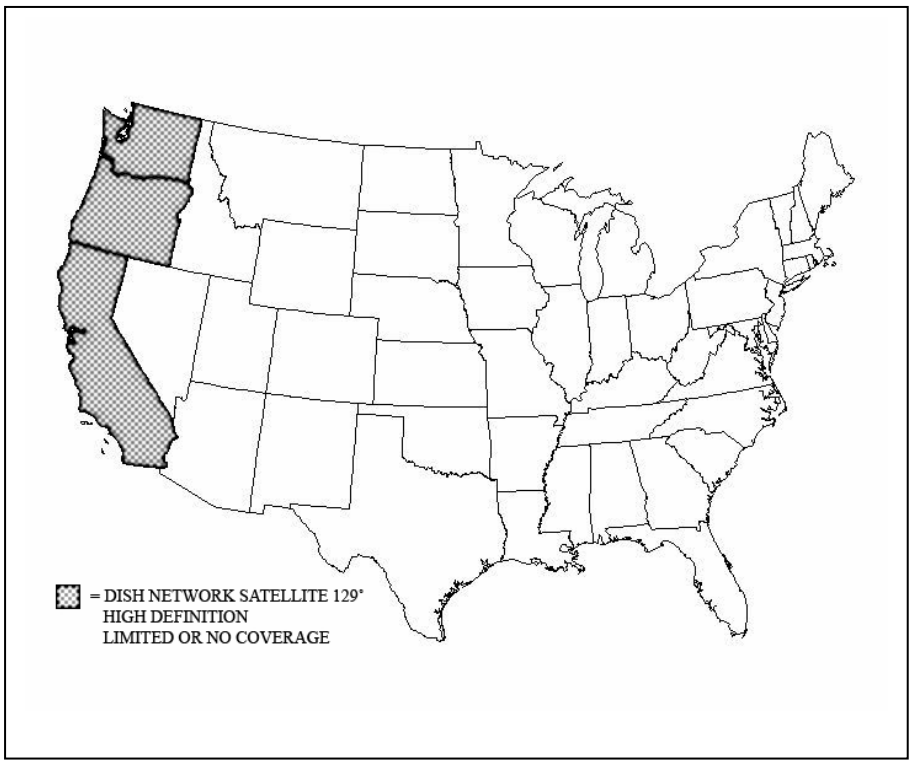
MODEL NUMBER	Skewable	Orbital Position	Multi Sat	Nomad 2 LED(s)
DIRECTV				
Executive 18"/24"	NO	101° Only	NO	FIND
Executive 18"/24"	NO	101° or 119°	NO	PEAK / FIND
MHDTV	YES	101° / 110° / 119°	YES	FIND / STOW
DISH NETWORK				
Executive 18"/24"	NO	119° or 110°	NO	NO LIGHTS
Executive 18"/24"	NO	119° or 110° or 61.5°	NO	DVB / PEAK/ FIND
Executive 18"/24"	NO	119° or 110° or 129°	NO	LOCK / FIND
Executive 18"/24"	NO	119° or 110° or 148°	NO	LOCK
MD500	YES	119° / 110°	YES	STOW
MD1000.2	YES	119° / 110° / 129°	YES	LOCK / STOW
BELL EXPRESSVU				
Executive 18"/24"	NO	82° or 91°	NO	PEAK
MD500	YES	82° / 91°	YES	PEAK / STOW
STAR CHOICE				
MSC60	YES	107.3° / 111.1°	YES	PEAK / FIND / STOW
SHOW MODE (for display purposes)				
SKEWABLE	YES	Continuous Motion	N/A	DVB / FIND / STOW
NON-SKEWABLE	NO	Continuous Motion	N/A	DVB / PEAK

Note: The FREEDOM (fixed dome) will function with the Nomad 2. It is not recommended. It may be programmed as a NON-SKEWABLE system for any of the above NON-SKEWABLE configurations. At the push of the SATELLITE Button it will toggle sequentially though the satellites for which it is programmed.

Nomad 2 Program LED's.

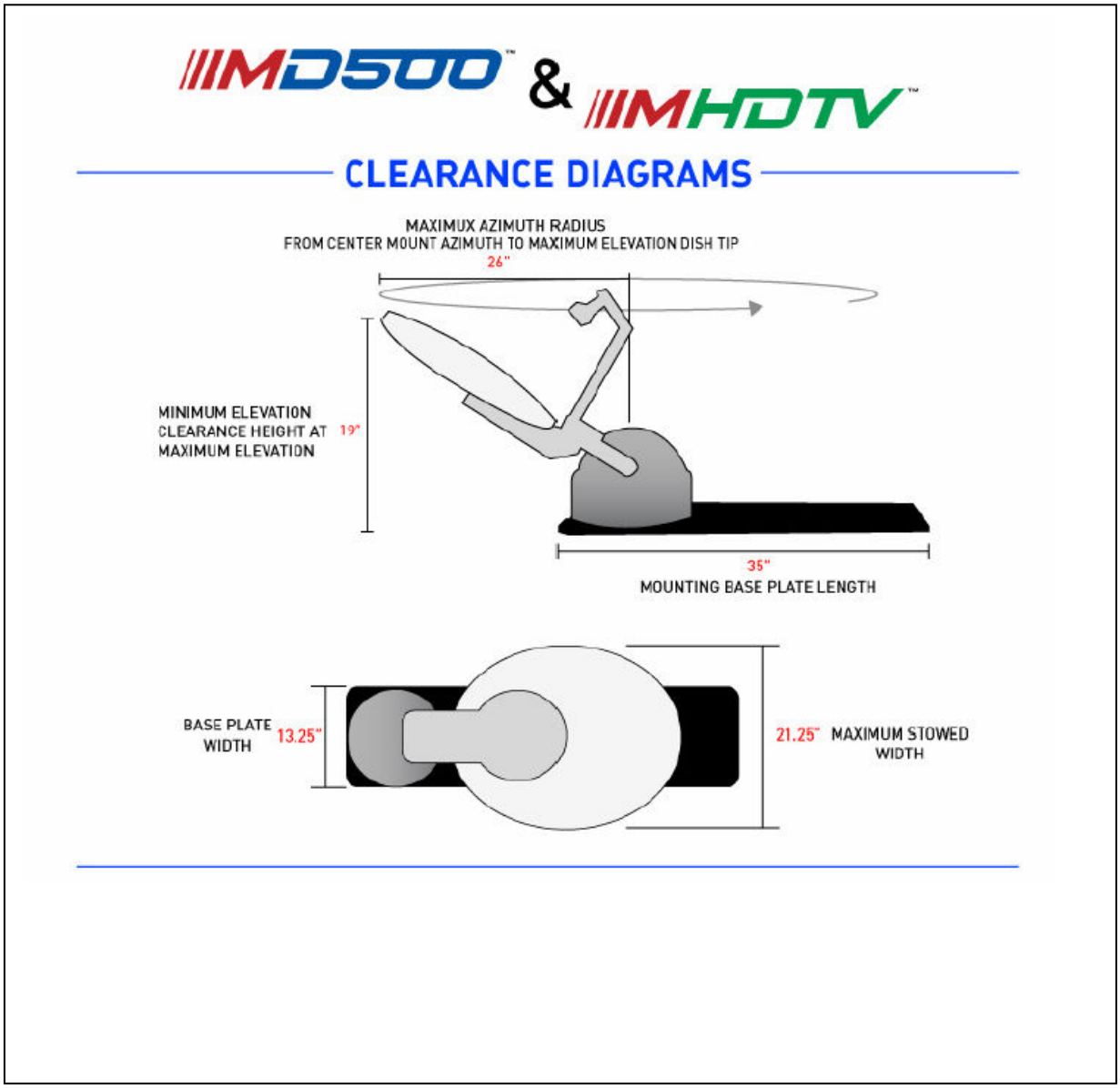
NOTE: The MD1000.2 has 2 limitations that can affect its operation.

1. The MD1000.2 has the same limitations that exist with the Dish Network D1000.2 home coverage. Coverage is limited due to the footprint of the satellite signal on the 129◦ High Definition Satellite. You will be able to receive programming on the other two (2) satellites (110◦ and 119◦) when in the shaded areas but may have **limited or no** coverage of the 129◦ satellite. This limited coverage may extend past the shaded areas but is known to be a problem within the shaded areas. Please call Dish Network (888-248-7116) for any additional information.



2. The size of the dish makes wind loading a factor. While under most circumstances you will not be affected but when winds reach an excess of 25 MPH (depending upon the direction of the wind) you could experience the mount being moved off the satellite. If this should happen, simply press the "FIND" button and the system will re-peak for signal strength or re-find as required.

CLEARANCE DIAGRAMS



First Time Setup

We have introduced an exciting new product, the Nomad 2. It has incorporated all the features that you (the dealer and consumer) have asked for. We are excited about it and know that you will be also. To help you become familiar with the programming, and to assist you in the first turn on, we are offering this Quick Guide to programming.

After all connections are made please take the time to read through this guide once and then follow each step as outlined:

TO PROGRAM

Step 1:

Make sure your Nomad 2 is turned OFF:

- Note: The Nomad 2 is OFF when the green light next to the power button is not lit.

Step 2:

Locate the FIND, STOW and POWER buttons on the Nomad 2:

- *Read the following steps carefully before beginning –*
  - With your right hand Press and hold down together the FIND and STOW buttons, while continuing to hold…..
  - ***Use your left hand to Press the POWER button once and release***
  - Your right hand will continue holding down the FIND and STOW buttons for an additional 5-7 seconds.
- This will put the Nomad 2 into a Program Mode.

Step 3:

Refer to the diagram on page 15 in the Nomad 2 Manual to determine what Program Mode settings you will need for the type of MotoSAT system you have:

- Use the FIND or STOW button to navigate through the different settings on the front LED panel of the Nomad 2.
- When the light configuration on the Nomad 2 matches the selected diagram on the page 14, press the POWER button once to turn off the Nomad 2.
- This will store the configuration that you have set.

Step 4:

Turn on the Nomad 2 by pressing the POWER button. Wait 5-7 seconds for the Nomad 2 to perform startup sequences.

TO TEST DISH

Step 5:

Complete a "Test Dish" by:

- Push both the FIND and STOW buttons at the same time.
- You will see the STOW light blink. It is indicating that the dish is moving.
- When the Test Dish is completed, the STOW light will stop blinking and go solid.

TO LOCATE SATELLITE

Step 6:

Press the FIND button.

- This will locate your satellite(s) based upon the configuration settings that have been programmed.

Thanks for buying a MotoSAT product.

TROUBLESHOOTING

ERROR CODES ARE FLASHING LED LIGHTS AT 1 SECOND INTERVALS

Stow Flashing: This is not an error but indicates the motors are moving.
Find Flashing: Invalid Mode selected, Skewable vs. Non-Skewable.
Find and Stow Flashing: Invalid Mode.
Peak Flashing: Motor Time Out. No counts in Elevation.
Peak and Stow Flashing: Motor Time Out. No counts in Azimuth.
Peak and Find Flashing: Motor Time Out. No counts in Skew.
Peak, Find and Stow Flashing: Limit Error in Elevation movement.
DVB Flashing: Limit Error in Azimuth movement.
DVB and Stow Flashing: Limit Error in Skew movement.
DVB and Peak Flashing: Only Main satellite found.
DVB, Peak and Stow Flashing: Main satellite not found but Secondary satellite was.
DVB, Peak, Find and Stow Flashing: Signal lost, NO LNB Power
Lock Flashing: No satellite found.
Lock and Stow Flashing: Over Temperature on Satellite Receiver.
Lock and Find Flashing: Dish did not raise high enough.
Lock, Find and Stow Flashing: Coax cables on reversed on back of Nomad.
Lock, Peak, Find and Stow Flashing: Could not find main satellite after Skew.
Lock and DVB flashing: EEPROM failure.
Lock, DVB and Stow flashing: AGC Control Failure.

NOTE: Before calling Technical Support please perform a "Test Dish" and press "Find" one more time before you call.

MotoSAT Customer/Technical Service – (1-800-247-7486 Ext. 338) - Available Mon-Fri 8:00 a.m. to 5:00 p.m. Mountain Standard Time.

- Please have your MotoSAT Model # and Satellite Receiver Brand prior to calling Customer/Technical Support.

Special Notes

Stowing the dish when all else fails.

If you are able to go onto the roof -

1. Unplug the "Green" 9 pin connector from the back of the NOMAD 2. This will release "dynamic braking" that holds the mount in position. The mount may now be rotated manually.
2. Go to the roof where you can apply a slight amount of force to move the dish into an acceptable position for traveling. . In Azimuth, rotate the mount in a counter clock wise direction to move to the proper stowed position.
3. Plug the "Green" 9 pin connector back into the Nomad 2.
4. Call Tech Support when you can perform additional trouble shooting.

If you are unable to go onto the roof –

The dish can be manipulated by applying 12 volt DC power to specific wires in the control cable located in the back of the NOMAD 2. The 12 Volts going to your NOMAD 2 controller (3 pin "green" connector) can be used as the 12 volt DC power source (see page 8.)

1. **ELEVATION** - Orange and Red wires (reversing polarity will change direction.)
2. **AZIMUTH** - Black and Brown (reversing polarity will change direction.)
3. **SKEW** - Brown and Red wires (reversing polarity will change direction.)

If a chain or motor/gearbox assembly is broken, the dish will have to be stowed by hand.

Dish Network receivers

NON-SKEWABLE Open Faced mounts.

If your satellite receiver is a Dish 500 or Dish Pro and you remove it from your home to your RV, you will need to perform a "Check Switch" **while the non-skewable dish is in the *STOWED POSITION*.** Your screen upon completion of the "Check Switch" should have 8 X's in the check boxes meaning that the "Check Switch" failed. This procedure must be accomplished ***before*** you "FIND" satellite. **Failure to do so will result in improper operation of the receiver.**

29 Jun '07

Nomad 1 & Nomad 2
Software Update

Required Equipment

1. Computer with 9 Pin Serial Port out (or adaptor).
2. Special 9-15 Pin Serial Cable (MotoSAT Part # CBL-SERIAL-DATA-10). A special configured cable that is available only through MotoSAT. Cost $19.00 PS&H.

Overview

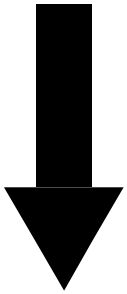
Nomad & Nomad 2 Software Update
This procedure outlines how to update the Nomad series controllers via your computer. A few key things to note are:

An automatic software upgrade module (MotoSAT Part # Module-Nomad (1) or (2)) is available through MotoSAT if a computer isn't available. This module attaches directly to the back of the Nomad series controller enabling it to load the new software. It can be ordered at No Charge. Customer will pay shipping (both ways). Module must be returned otherwise customer will be billed $65.00 against their Credit Card. Contact MotoSAT's Tech Support for more information.

For Any further questions, please contact MotoSAT's Tech Support team at:
support@motosat.com

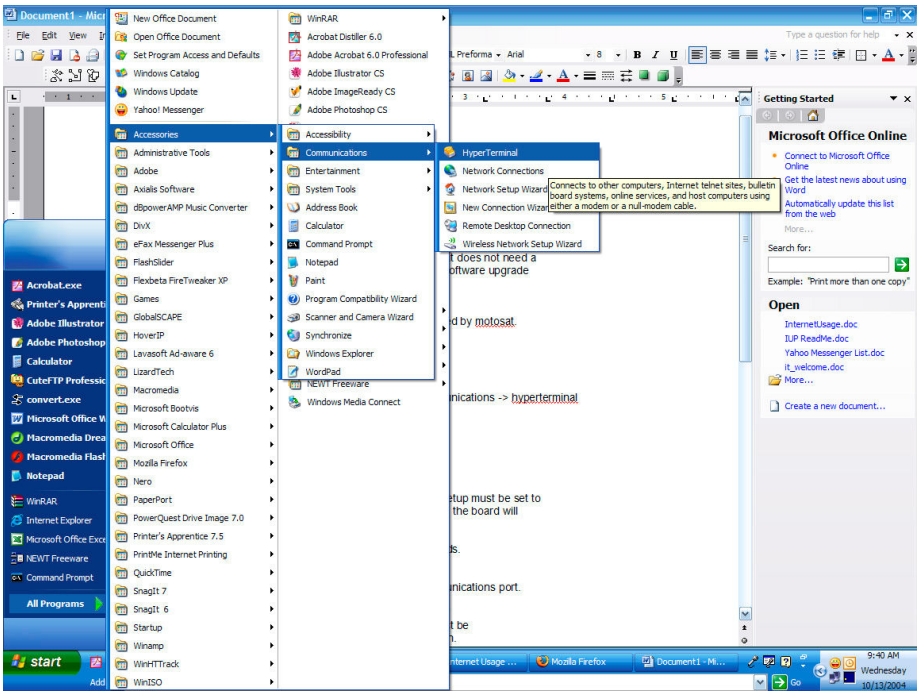
Updating the Nomad 1 & Nomad 2 Controller

Step 1-Opening HyperTerminal
• **TURN OFF THE NOMAD CONTROLLER**



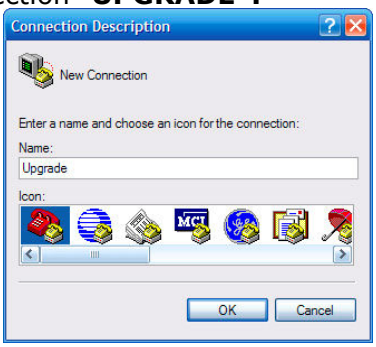
• You now need to start a program on your computer to communicate with the Nomad. This Program is called **HYPERTERMINAL.** It can be found by clicking the **START BUTTON,** then

click **ALL PROGRAMS,** then click **ACCESSORIES,** then click **COMMUNICATIONS,** then click **HYPERTERMINAL.**



Step 2- Configuring HyperTerminal

• Name your HyperTerminal Connection "**UPGRADE".**



• You now need to choose your port you wish to use to connect to your Nomad. Generally **COM 1** is the best choice.

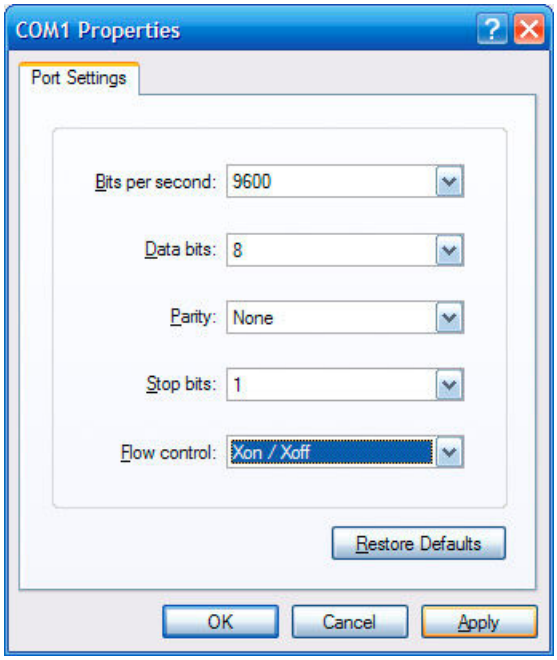
• You must now enter properties for connecting using COM 1.

For the **NOMAD 1,** use the following:

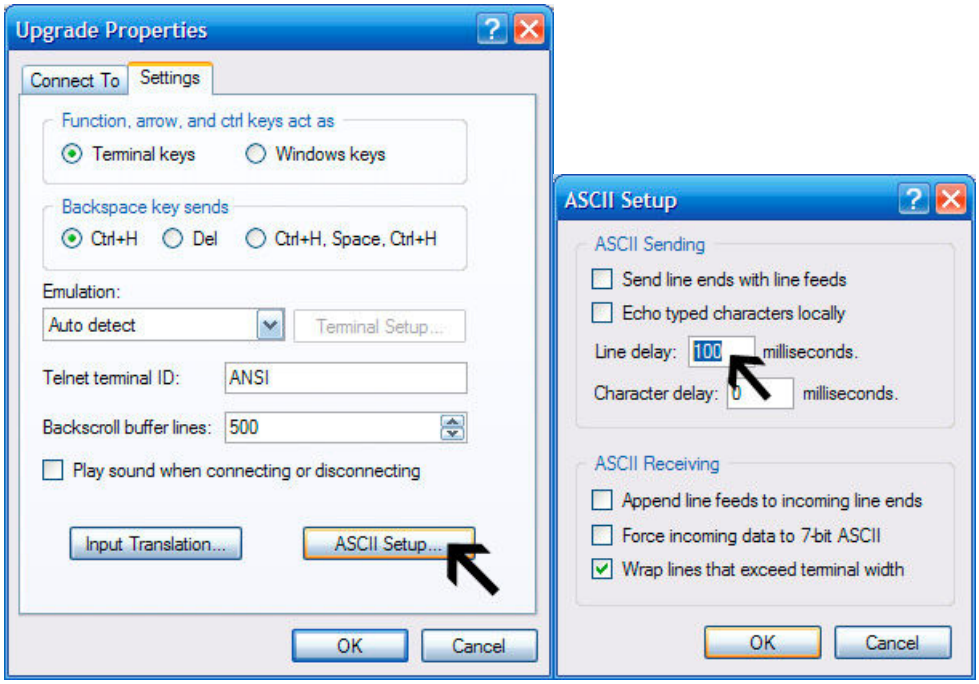
NOMAD **1**
Bits per second: **9600**
Data bits: **8**
Parity: **None**
Stop bits: **1**
Flow control: **Xon / Xoff**

For the **NOMAD 2,** use the following:

NOMAD **2**
Bits per second: **115200**
Data bits: **8**
Parity: **None**
Stop bits: **1**
Flow control: **Xon / Xoff**



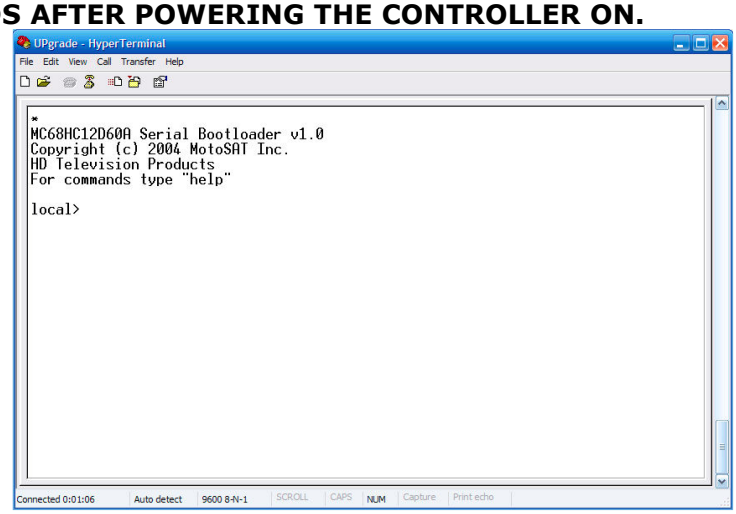
• After clicking "**OK"**, In the HyperTerminal window, click **FILE,** then **PROPERTIES,** then click the **SETTINGS** tab**.** Click the **ASCII SETUP** button. Change the **LINE DELAY** setting from **0, to 100.**



YOUR HYPERTERMINAL SETTINGS ARE NOW CONFIGURED

Step 3- Loading software to the Nomad

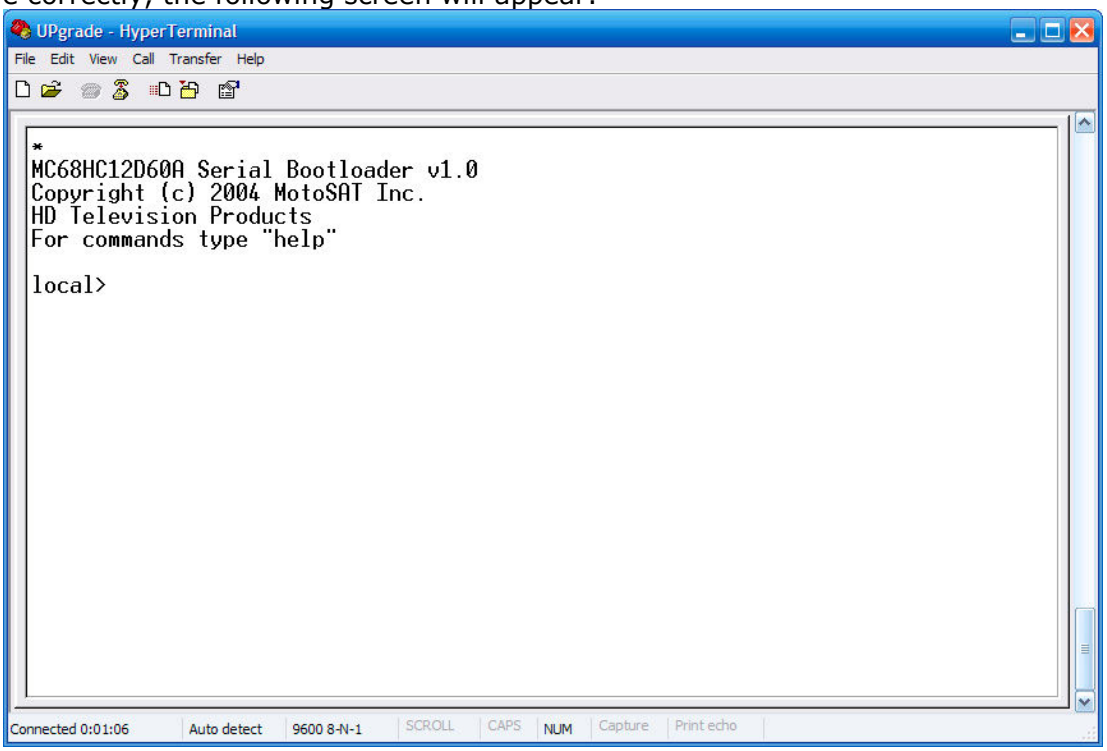
• TURN ON YOUR CONTROLLER AND PRESS THE * KEY [SHIFT+8] ON THE KEYBOARD, WITHIN 3 SECONDS AFTER POWERING THE CONTROLLER ON.



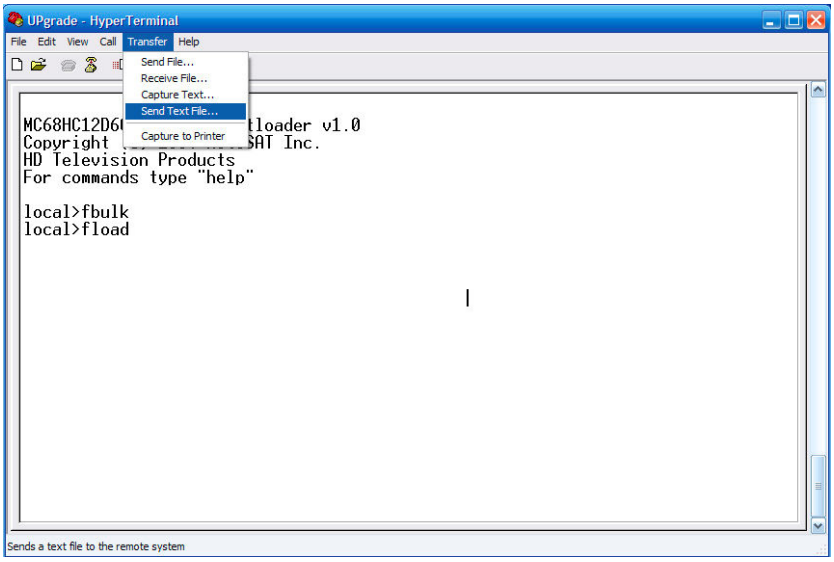
IF NOTHING APPEARS YOU HAVE CHOSEN THE WRONG COM PORT-REFER TO THE HYPERTERMINAL SETUP AND RECONFIGURE

IF YOU SEE 'GAIN ADJUSTED' YOU HAVE TAKEN TOO LONG TO PRESS THE * KEY. RETRY THE CONTROLLER POWER ON CYCLE AGAIN

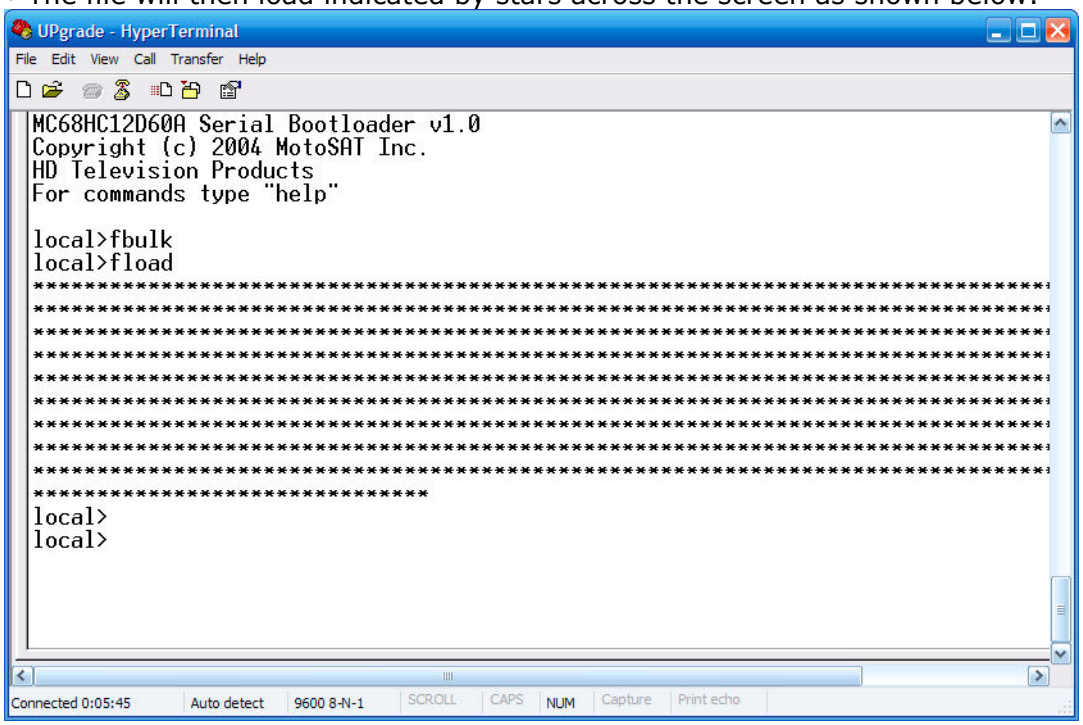
• If done correctly, the following screen will appear:



• At the **local>** prompt, type **fbulk** and press the **ENTER** key.
• **YOU WILL RECEIVE THE local> PROMPT BACK**
• At the **local>** prompt, type **fload** and press the **ENTER** key.
• **YOU WILL NOT RECEIVE THE local> PROMPT THIS TIME**
• You can now send software to the Nomad for updating. On the HyperTerminal window click **TRANSFER,** then click **SEND TEXT FILE.**
• Browse for the Nomad file you wish to send to the Nomad controller. Usually it can be found on your **DESKTOP, or in MY DOCUMENTS.**



• The file will then load indicated by stars across the screen as shown below:



• When the software has been loaded, you will again receive the **local>** prompt.
• Type **default** at this prompt, then press the **ENTER** button.

YOUR NOMAD 1 or 2 HAS NOW BEEN UPGRADED!

YOU MUST NOW RUN A TEST DISH IN ORDER TO ENSURE PROPER FUNCTIONALITY.

• Nomad 1 Test Dish Procedure
You will need to run a **TESTDISH**. Do this by turning off the nomad, placing **Switch 1 in the on or up position**, turning on the nomad, and waiting for the test dish to finish. Turn off the nomad, change Switch 1 back to the off or down position and turn the nomad back on.

BE SURE TO HAVE THE 3RD SWITCH UP IF THE DISH YOU ARE USING HAS A SKEWABLE FACE!

• Nomad 2 Test Dish Procedure
Simply press the **SEARCH AND STOW BUTTONS AT THE SAME TIME.** This will run a test dish on your system.

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